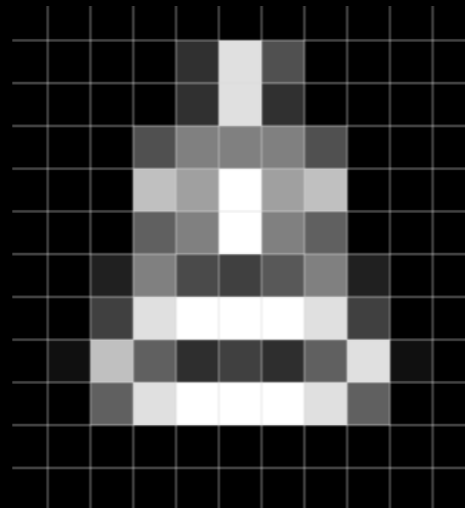


Every pixel counts web map symbols for the National Park Service



Jake Coolidge @jccartography
NACIS Annual Meeting
Minneapolis, MN Oct. 15, 2015

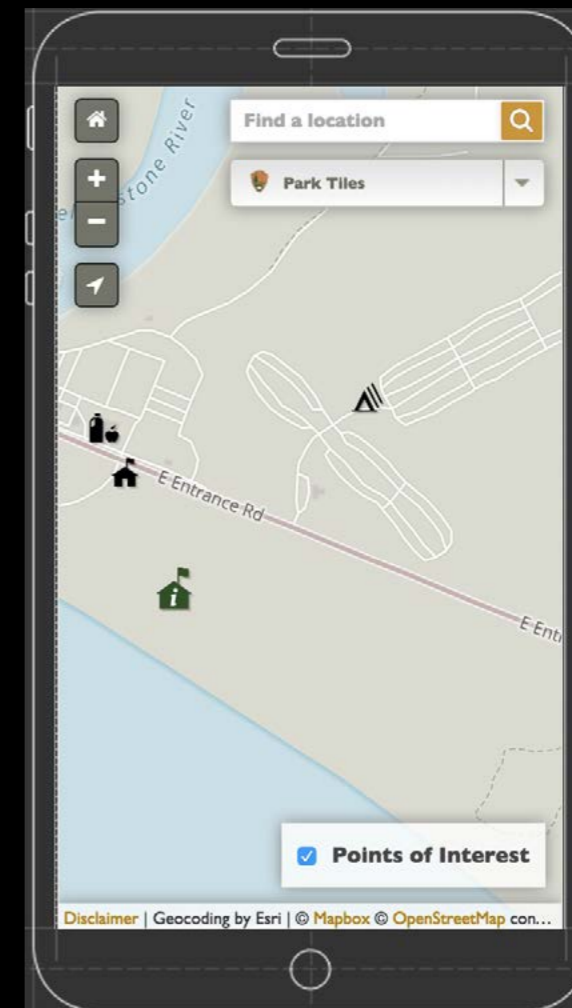
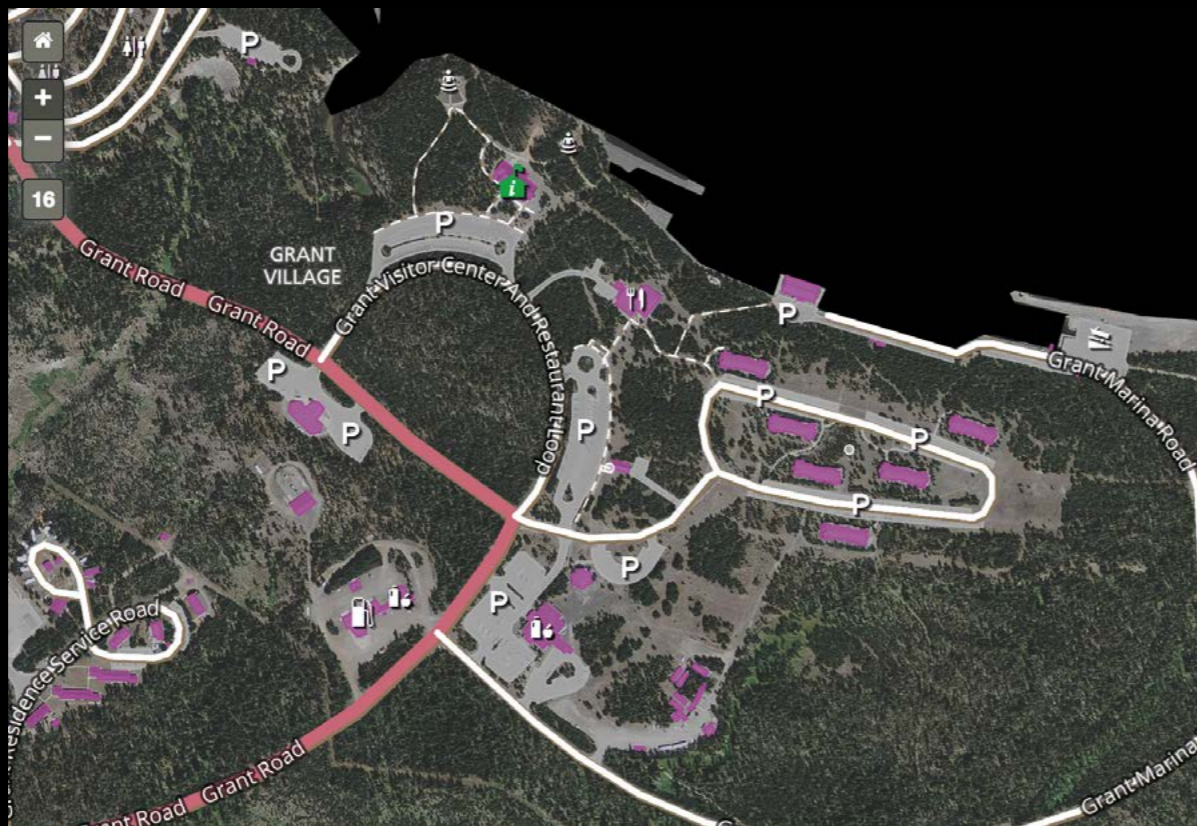


NPMMap

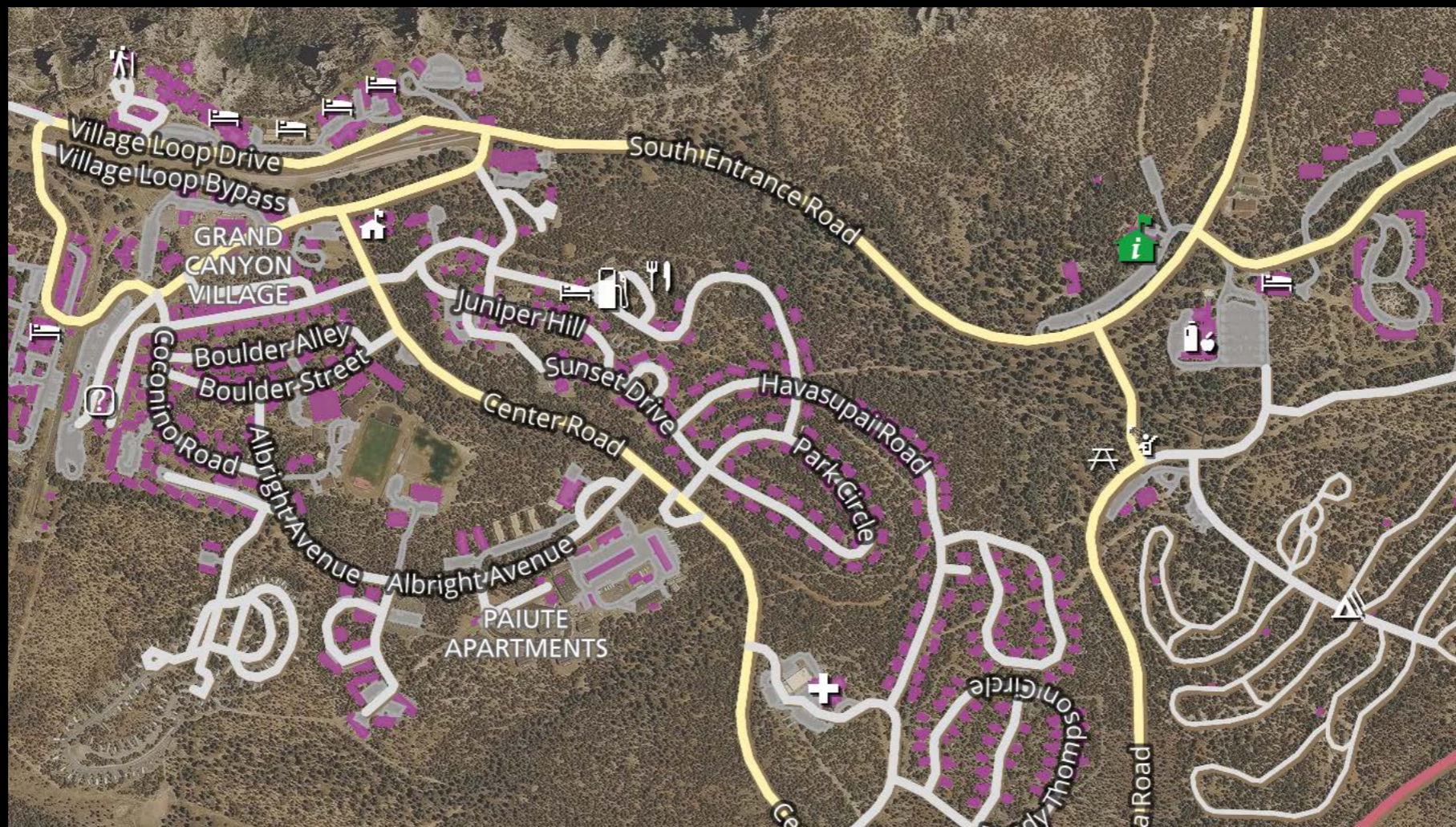
Colorado
State
University



Web and mobile maps for the NPS



NPS Places



Design Considerations

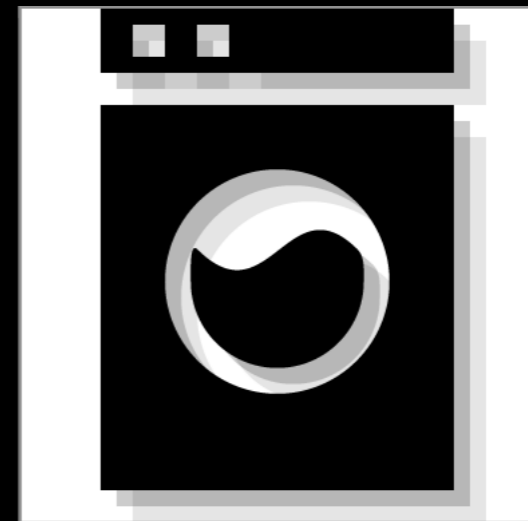
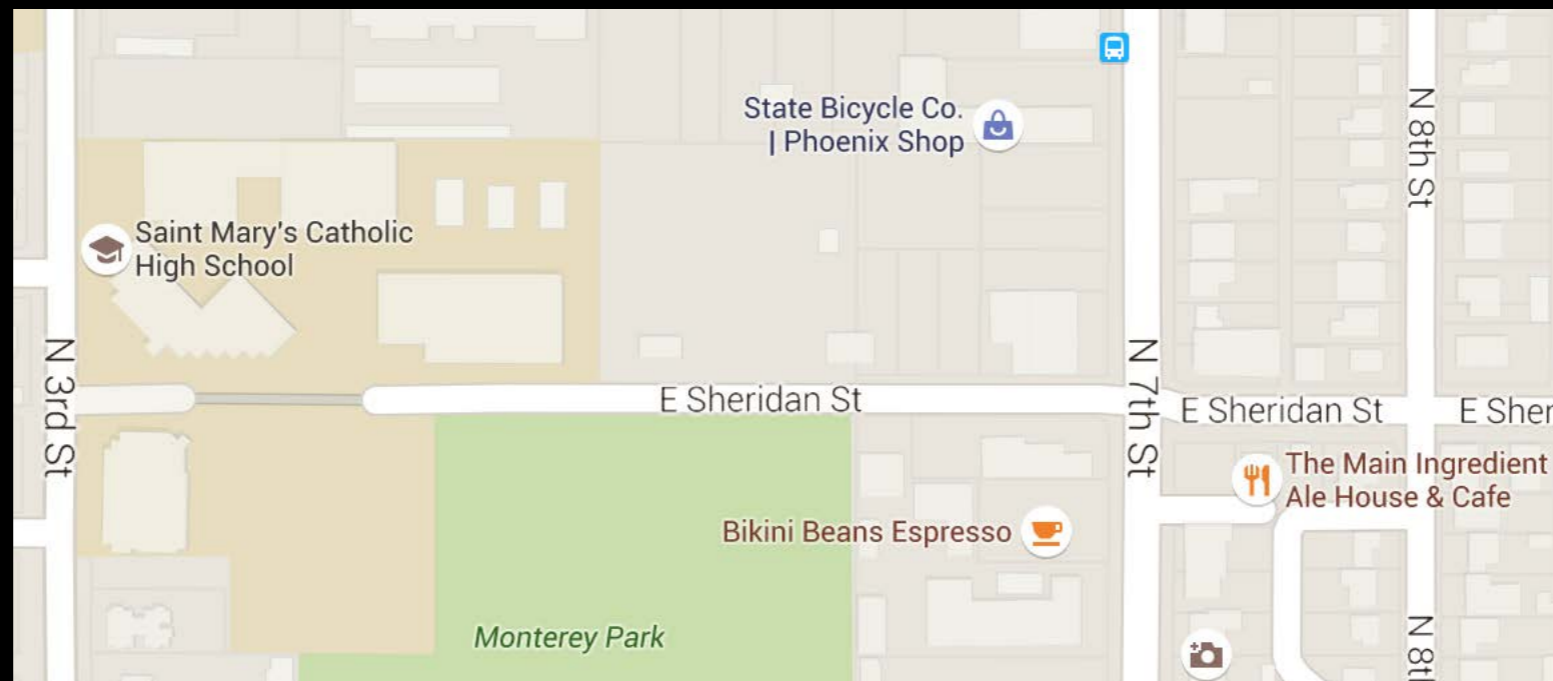


photo by Bruce Fingerhood, 2004
<http://www.flickr.com/photos/springfieldhomer/42195419/>

Design Considerations

Recognizability

P. Hofmann: “bank on the learnability of a simple symbol rather than the immediate intuition of a complicated symbol”

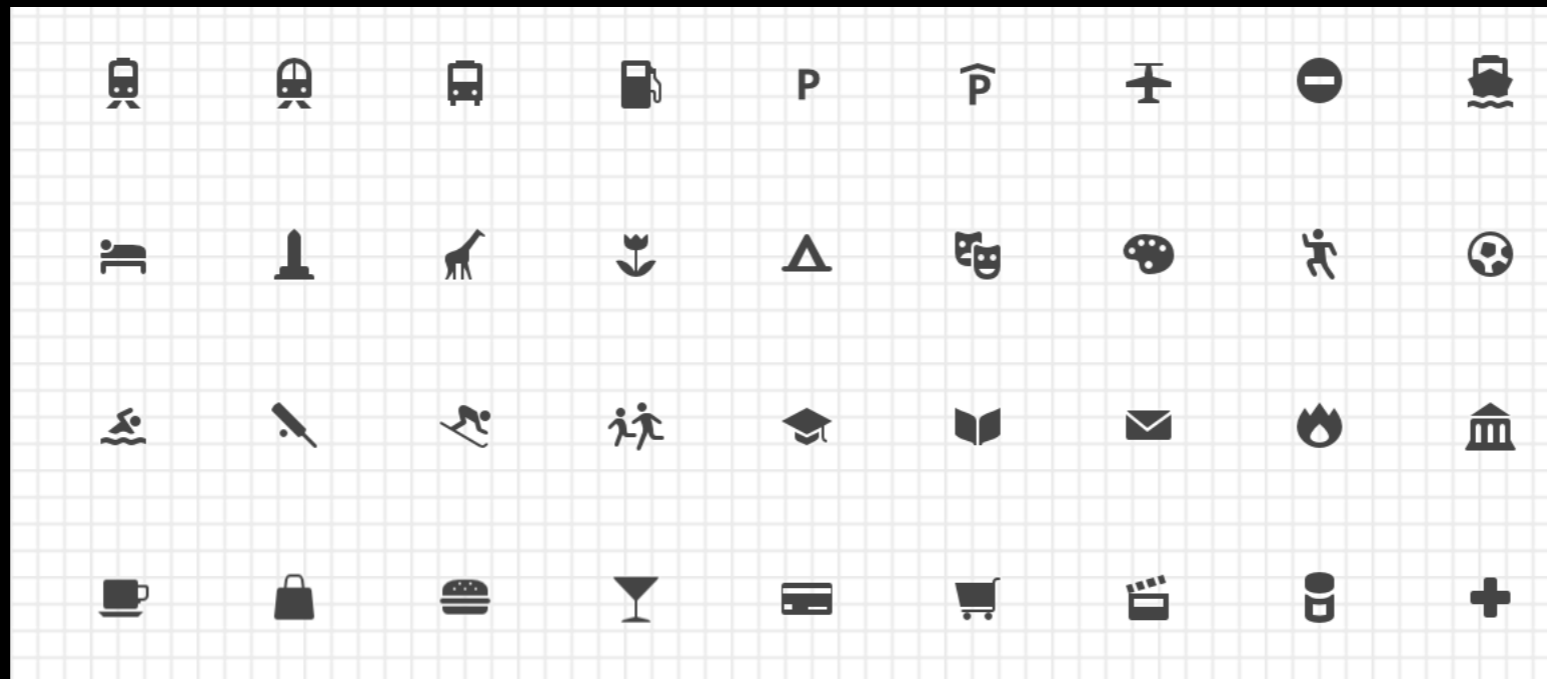


Google Maps

Design Considerations

Recognizability

J. Stevens et al: "Symbols with strong semantic relationships with their referent can be identified more quickly "

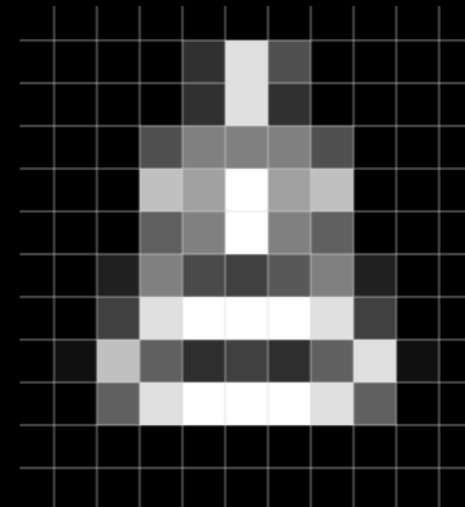


Mapbox Maki

Design Considerations

Recognizability

Legibility



9 x 9px amphitheater symbol



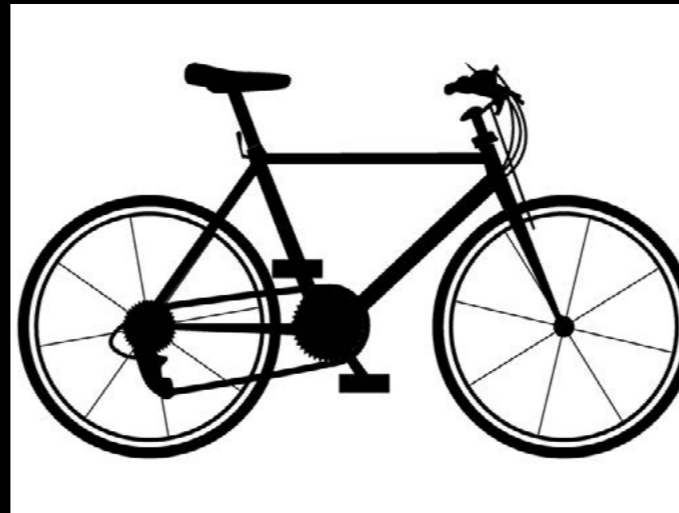
NPM laundry symbol in six sizes
(32px, 25px, 16px, 17px, 13px, 9px)

Design Considerations

Recognizability

Legibility

Complexity



Erika Hall

<https://www.flickr.com/photos/mulegirl/99132433>

Alex Valdivia

<https://thenounproject.com/search/?q=bicycle&i=16775>

Design Considerations

Recognizability

Legibility

Complexity



Design Considerations

Recognizability

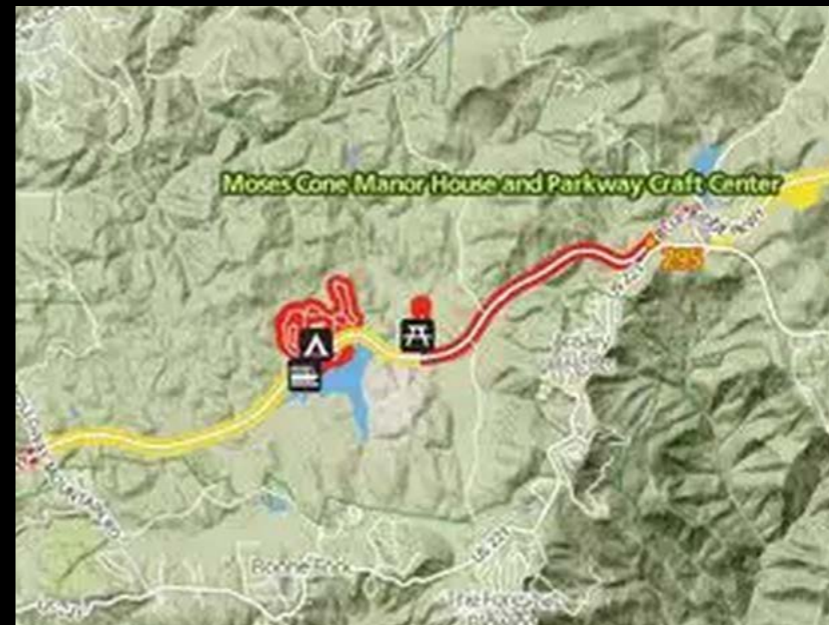
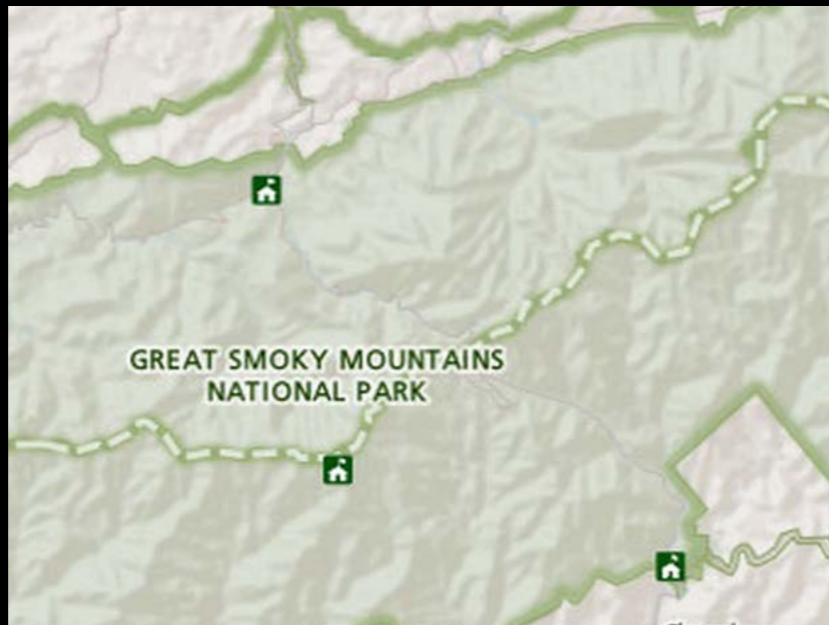
Legibility

Complexity

Style, look and feel











































Design Challenge

Improve NPMMap's symbol set, 2014



Design Challenge

Improve NPMMap's symbol set, 2014

| Optimized for 72dpi 30px Black | | Optimized for 72dpi 30px White | | Optimized for 72dpi 22px Black | | Optimized for 72dpi 22px White | | Optimized for 72dpi 14px Black | | Optimized for 72dpi 14px White |
|---|--|---|--|---|--|---|--|---|--|---|
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Background

NPS print map symbols





















Map of Grand Teton National Park
by the cartographers at the Harpers Ferry Center

Background

NPS print map symbols

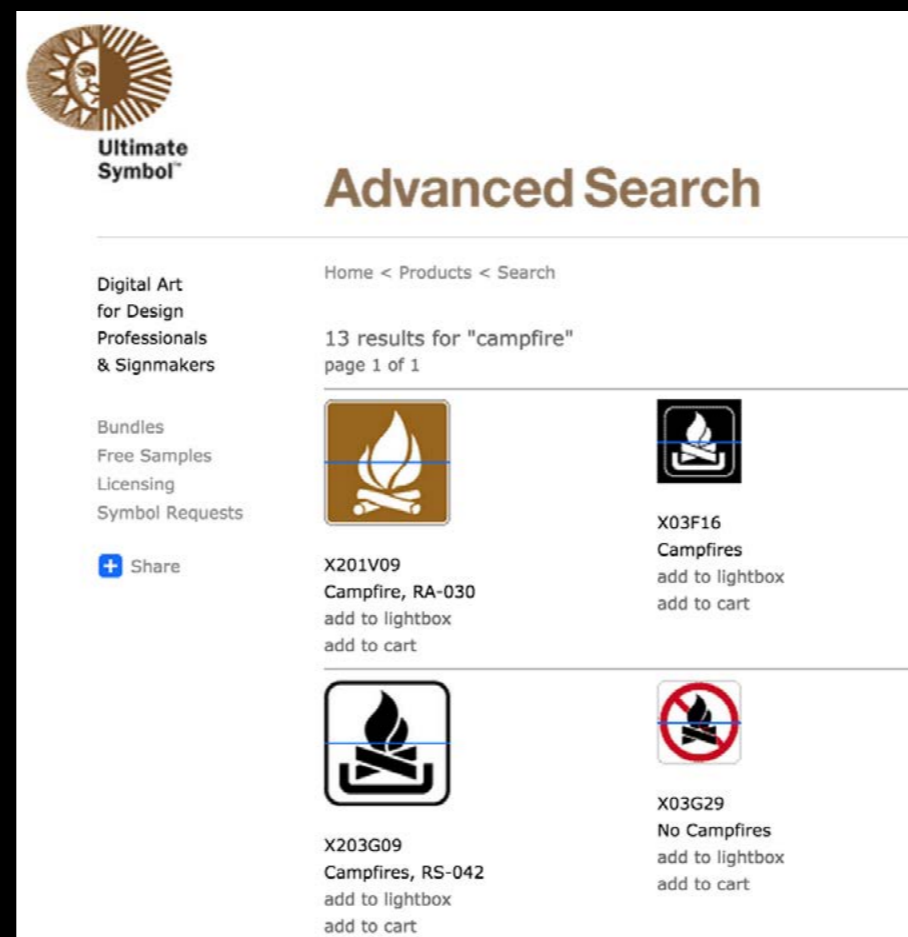
Map Pictographs

| | | |
|---|---|-----------------------|
|  |  | Airport |
|  |  | Amphitheater |
|  |  | Boat launch |
|  |  | Boat tour |
|  |  | Bicycle trail |
|  |  | Bus stop/Shuttle stop |
|  |  | Campfire |
|  |  | Campground |
|  |  | Canoe access |

“The NPS Graphic Identity Program develops graphic standards that guide the design of a broad range of communication media within NPS... (and) provides tools and guidelines to help all of us achieve a more consistent approach to the design of our visual communications.”

Background

NPS print map symbols originate from the Ultimate Symbol Collection



Background

NPS print map symbols

**originate from the Ultimate
Symbol Collection**

**shapes are then simplified,
line widths and internal
distances increased**



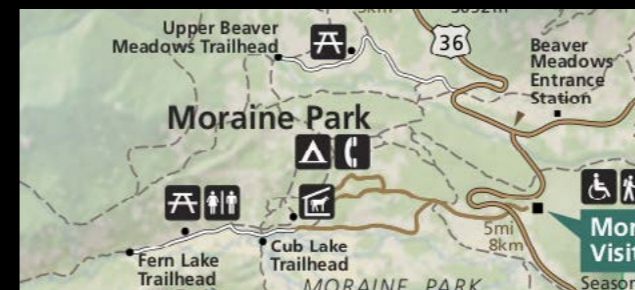
Background

NPS print map symbols

**originate from the Ultimate
Symbol Collection**

**shapes are then simplified,
line widths and internal
distances increased**

**intentionally bold
for high contrast
with map background**



Adapting symbols

Design framework

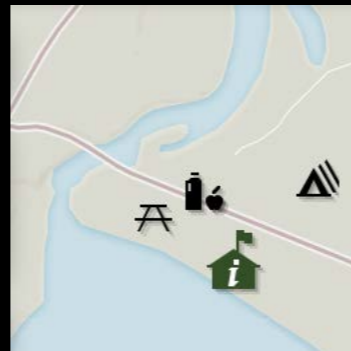
slim profiles



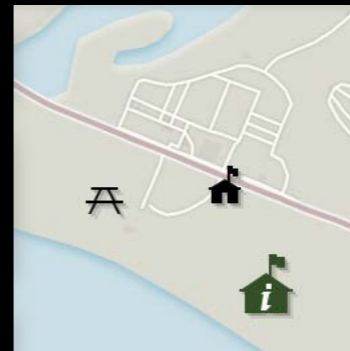
z11



z12



z13



z14



z15



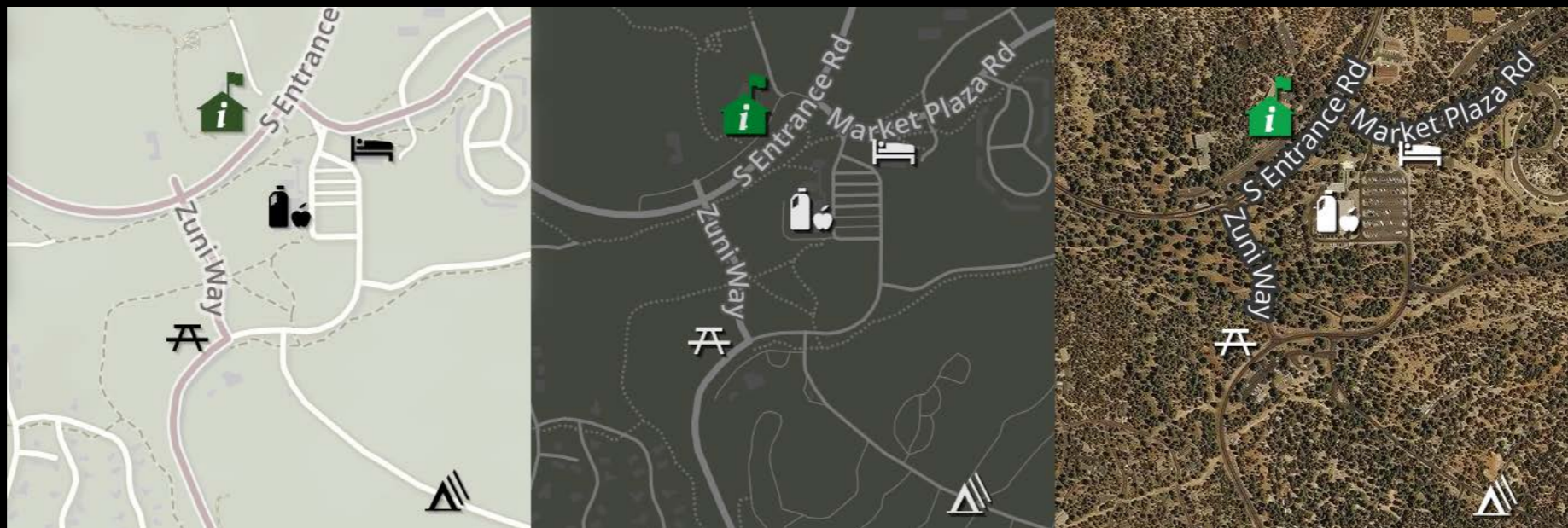
symbols in NPMMap Builder

Adapting symbols

Design framework

slim profiles

black, off-white, and white
versions support multiple
backgrounds



Adapting symbols

Design framework

slim profiles

**black, off-white, and white
versions support multiple
backgrounds**

**multiple sizes for greater
cartographic flexibility**



Adapting symbols

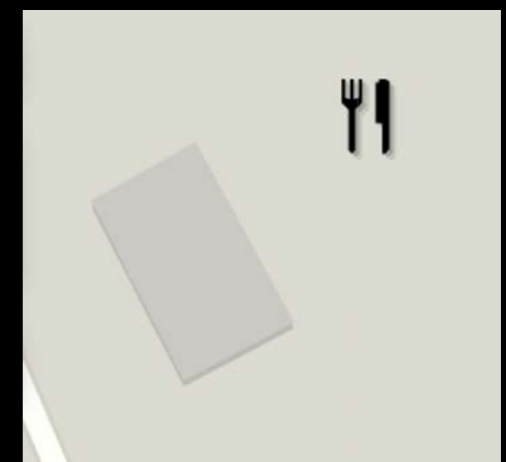
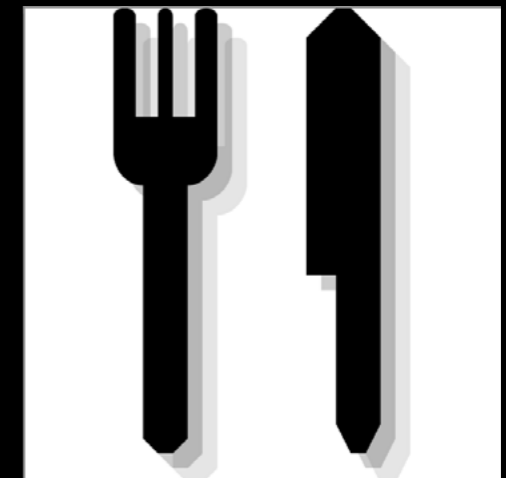
Design framework

slim profiles

**black, off-white, and white
versions support multiple
backgrounds**

**multiple sizes for greater
cartographic flexibility**

**shadow effects provide visual
dimensionality**





















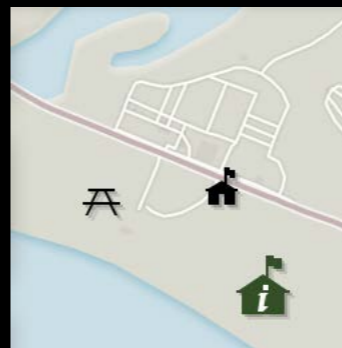
Adapting symbols

Design framework

HFC + NPMMap

Map Pictographs

| | | |
|---|---|-----------------------|
|  |  | Airport |
|  |  | Amphitheater |
|  |  | Boat launch |
|  |  | Boat tour |
|  |  | Bicycle trail |
|  |  | Bus stop/Shuttle stop |
|  |  | Campfire |
|  |  | Campground |
|  |  | Canoe access |



Recent design examples

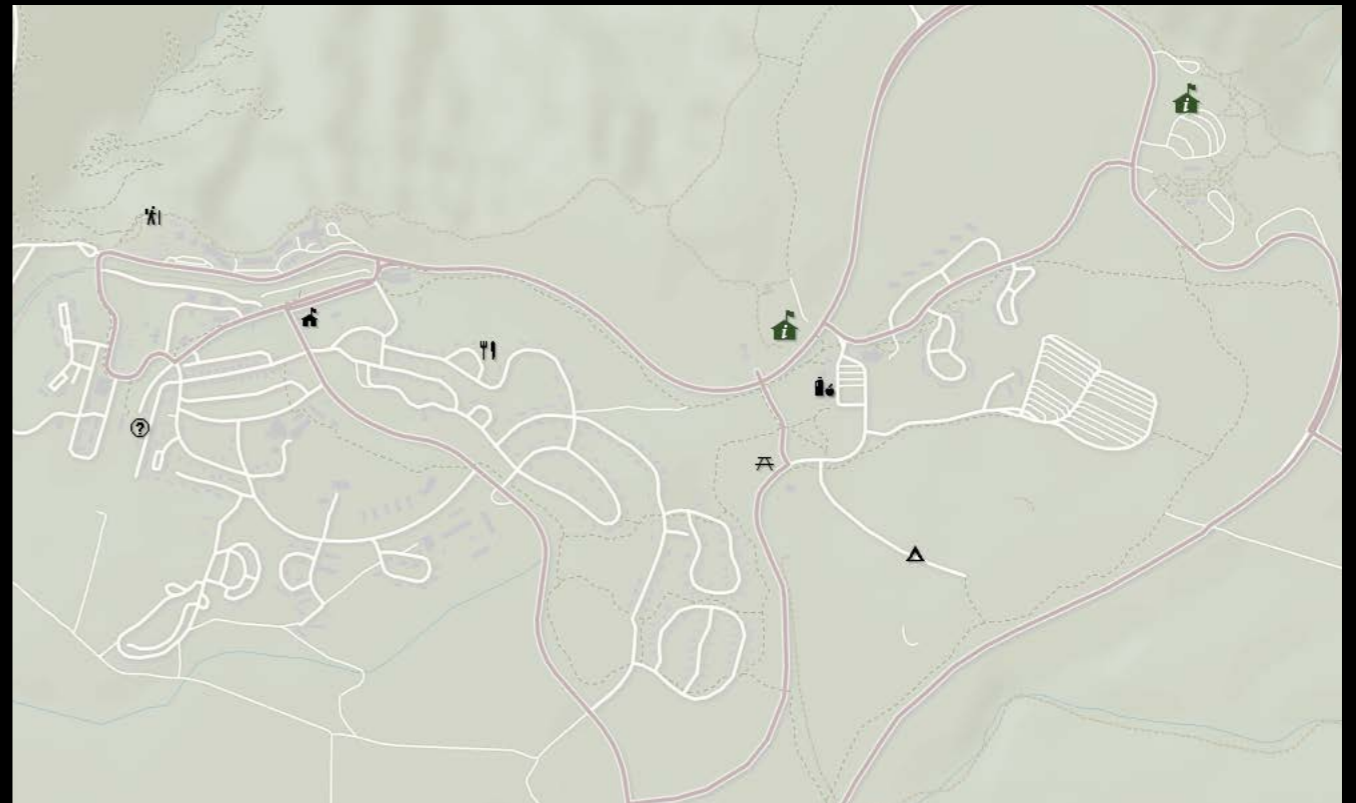
Information symbol



original
HFC
symbol



initial
NPMaP
symbol

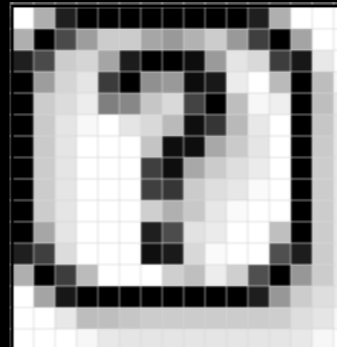


Recent design examples

Information symbol



revised NPMMap
symbol



(pixel preview)

Recent design examples

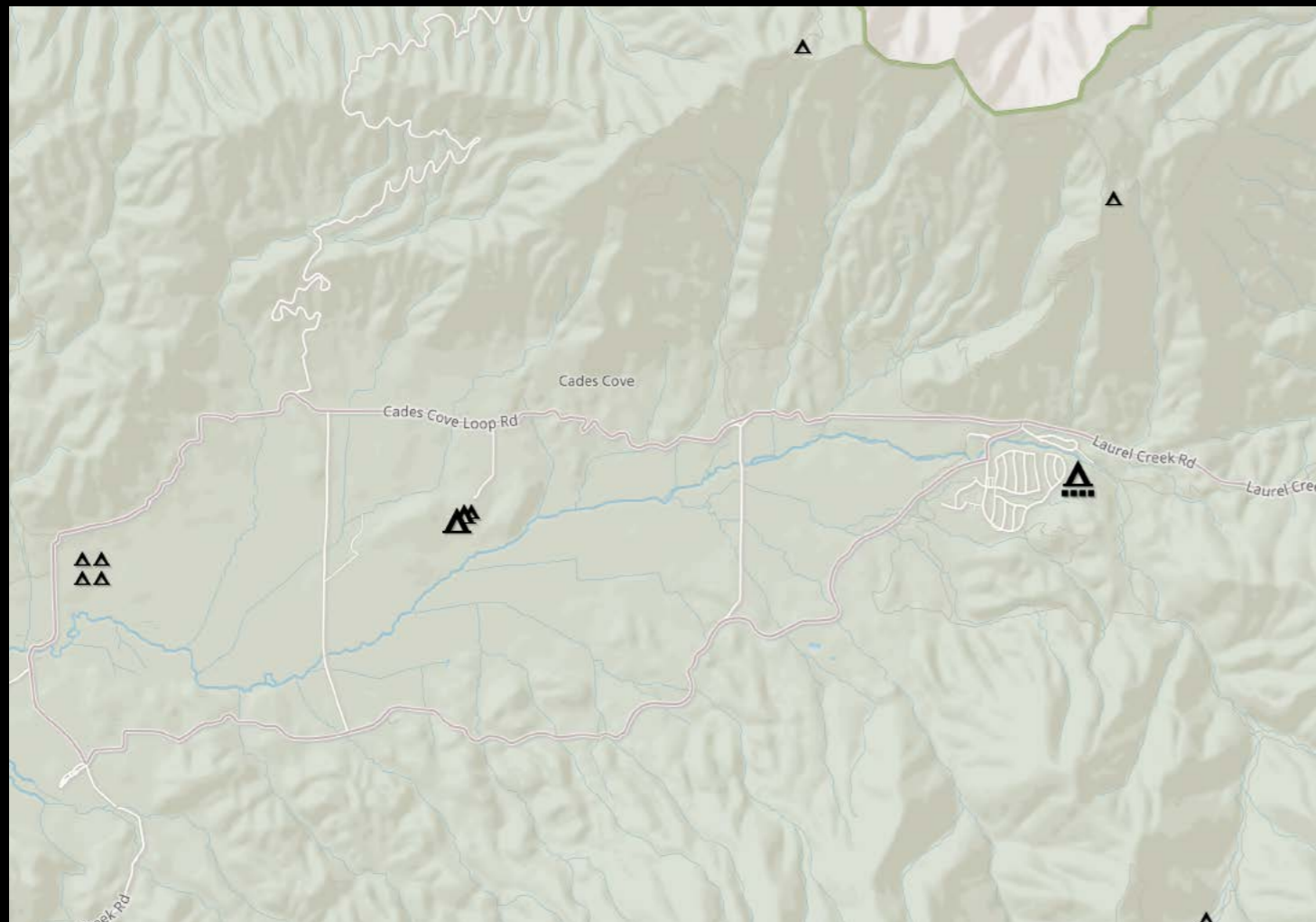
Campgrounds vs. campsites



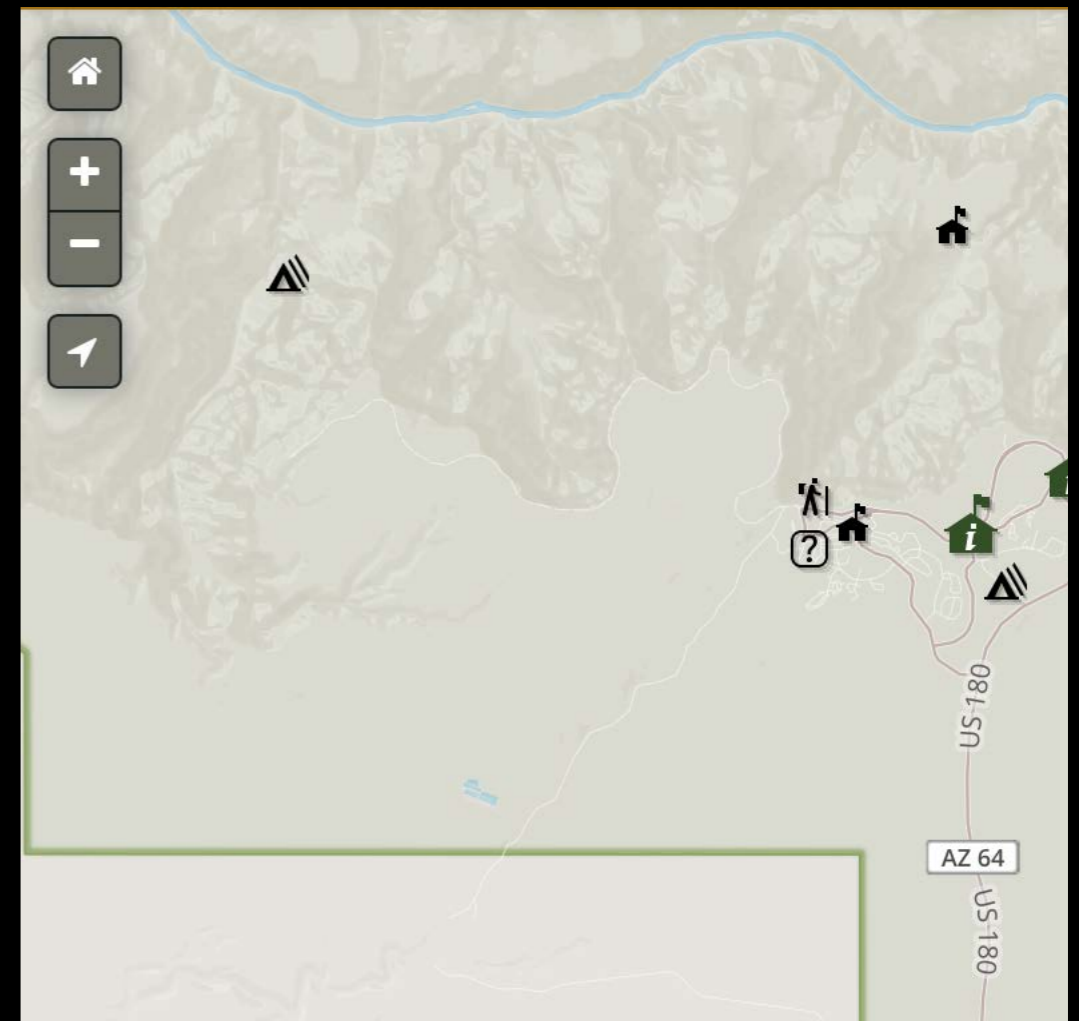
(l) photo by Grand Canyon NP
https://www.flickr.com/photos/grand_canyon_nps/6890179264
(r) photo by Paxson Woelber
https://www.flickr.com/photos/paxson_woelber/5433948195

Recent design examples

Campgrounds vs. campsites



early design variations



finalized design

Recent design examples

Spring symbol



jakecoolidge commented 28 days ago

Owner



Many weeks later, and I'm proposing a rather radical departure from the traditional USGS symbol, which initially looked like this when modified to fit in our symbol library:



32 24 16

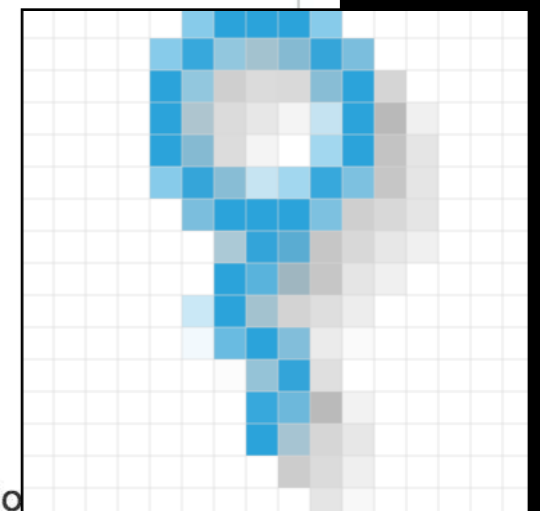
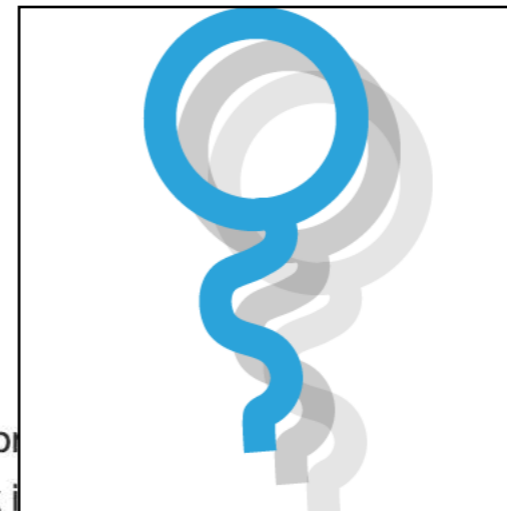
Now I'm proposing something that

- doesn't use color
- hopefully better fits with the other symbols in the library
- is a little "heftier" with its pixels—I find the linework in the previous design a bit thin at smaller sizes



32 24 16

I'm going to mull this over, and welcome your feedback in the meantime!



Recent design examples

Spring symbol

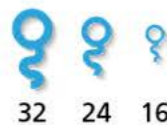


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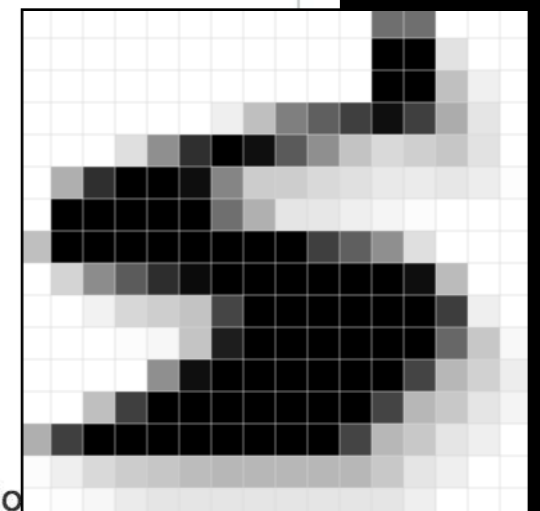
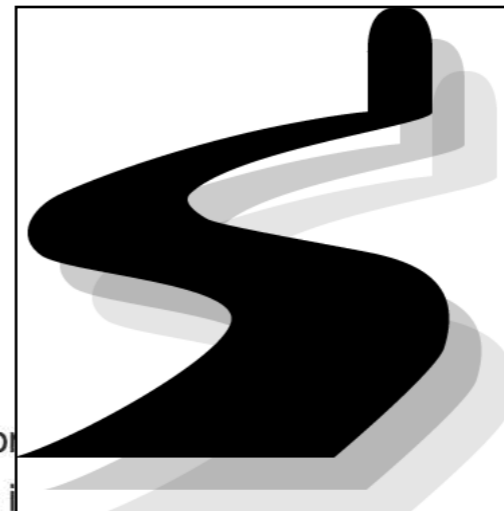
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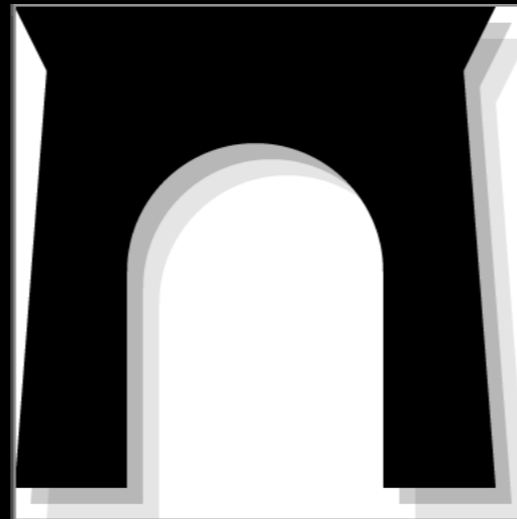


Recent design examples

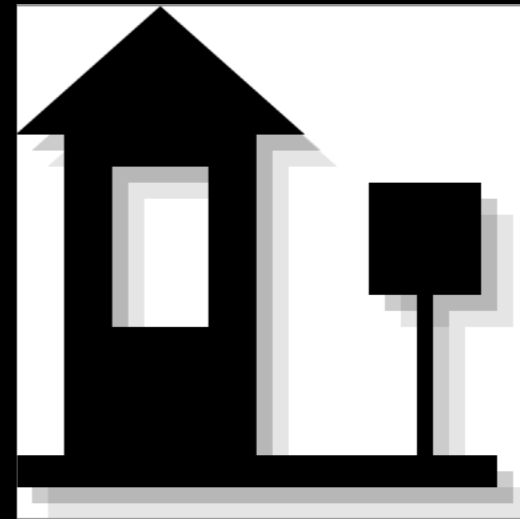
Entrance station symbol



ranger station symbol



early variation



final design

Future developments

adapting symbols to OpenGL

**better intergration into our
mobile maps**

**automating elements of the
artwork production**

**revisiting/redesigning symbols
based on feedback**

**revising the placemarkers used in
NPMMap Builder**

Learn more

NPMap Symbol Library:

<http://www.nps.gov/npmap/tools/npmap-symbol-library>

Github repository:

<https://github.com/nationalparkservice/npmap-symbol-library>

NPS Graphic Identity Standards:

<http://www.nps.gov/hfc/services/identity/>

References

Stevens, Joshua A., Anthony C. Robinson, and Alan M. MacEachren. (2013). "Designing Map Symbols for Mobile Devices: Challenges, Best Practices, and the Utilization of Skeuomorphism." 26th International Cartographic Conference. http://icaci.org/files/documents/ICC_proceedings/ICC2013/_extendedAbstract/356_proceeding.pdf

Wallace, Tim. (2011). "Interview with a Celebrity Cartographer: Patrick Hofmann." *Cartographic Perspectives*, 0(69), 83-90. doi:10.14714/CP69.30

thanks!

jake_coolidge@partner.nps.gov
@jccartography



NPMMap

Colorado
State
University

